IN THE CLAIMS

Please **amend** claims 1, 4, 7, and 13-18 and **add** new claims 19-28 as shown in the Summary of the Claims, *infra*.

Added matter is underlined and deleted matter is struck through. Claims 1, 4, 11, and 13-18 have been re-written to more clearly describe the invention and are not claim narrowing as that term is understood. Therefore, amendment to claims 1, 4, 11, and 13-18 is made without the intention of surrendering any equivalents to which the original claim and the amended claim would be entitled.

SUMMARY OF THE CLAIMS

Claim 1 (currently amended). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals, wherein the optical disk includes ~~and~~ a recording area for recording data of a predetermined number of units n (n: natural number), the recording area ~~is~~ placed between the concave and convex areas arranged with constant intervals,

the recording method comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied, by carrying out a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, on the first two-dimensional array; and

successively sending data on each row in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk.

Claim 2 (original). The recording method for an optical disk as defined in claim 1, wherein an addition code having a length satisfying the equation a X m=b X n (a, b: natural numbers) in the second two-dimensional array is added to each row of the second two-dimensional array.

Claim 3 (original). The recording method for an optical disk as defined in claim 1, wherein: supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c.

Claim 4 (currently amended). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals, wherein the optical disk includes ~~and~~ a recording area for recording data of a predetermined number of units n (n: natural number), the recording area ~~is~~ placed between the concave and convex areas arranged with constant intervals,

the recording method comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a third two-dimensional array having the number of data contained in one row that does not exceed the number of rows by carrying out an error-correction encoding process on the first two-dimensional array by using a code sequence constituted by a data alignment in a diagonal direction so as to add a row constituted by a first encoding parity to the first two-dimensional array;

forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied by carrying out an error-correction encoding process on the third two-dimensional array by using a code sequence constituted by a data alignment in a row direction so as to add a second encoding parity to the third two-dimensional array; and

successively sending data on each row in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk.

Claim 5 (original). The recording method for an optical disk as defined in claim 4, wherein an addition code having a length satisfying the equation a X m = b X n (a, b: natural numbers) in the second two-dimensional array is added to each row of the second two-dimensional array.

Claim 6 (original). The recording method for an optical disk as defined in claim 4, wherein: supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c.

Claim 7 (currently amended). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals wherein the optical disk includes ~~and~~ a recording area for recording data of a predetermined number of units n (n: natural number), the recording area ~~is~~ placed between the concave and convex areas arranged with constant intervals,

the recording method comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a second two-dimensional array by carrying out a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array; and

successively sending data on the respective rows in the second two-dimensional array while exchanging the data so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area, thereby recording all the data in the second two-dimensional array on the recording area on the optical disk.

Claim 8 (original). The recording method for an optical disk as defined in claim 7, further comprising the step of:

carrying out on the first two-dimensional array a plurality of error-correcting encoding processes including an error-correction encoding process that forms a code sequence by using a data alignment in a recording direction of data onto the optical disk in the second two-dimensional array,

wherein a parity, which has been generated in an error-correction encoding process that forms a code sequence by using a data alignment in a recording direction of data on the optical disk in the second two-dimensional array, is recorded on the portion adjacent to the concave and convex areas in the recording area.

Claim 9 (original). The recording method for an optical disk as defined in claim 7, further comprising the step of:

carrying out a plurality of error-correcting encoding processes on the first two-dimensional array,

wherein a parity, formed by the error-correction encoding process having a short minimum distance of codes among the plurality of error encoding processes, is preferentially recorded on the portion adjacent to the concave and convex areas in the recording area.

Claim 10 (original). The recording method for an optical disk as defined in claim 7, wherein the second two-dimensional array has a length of each row that is set to m (m: natural number), with a X m = b X n (a, b: natural numbers) being satisfied.

Claim 11 (original). The recording method for an optical disk as defined in claim 10, wherein an addition code having a length satisfying the equation a X m= b X n (a, b: natural numbers) in the second two-dimensional array is added to each row of the second two-dimensional array.

Claim 12 (original). The recording method for an optical disk as defined in claim 10, wherein: supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c.

Claim 13 (currently amended). An optical disk recording apparatus, which records information on an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals ~~and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals~~, wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals,

the optical disk recording apparatus comprising:

encoding means for forming a first two-dimensional array by adding addition data to input data, for carrying out a plurality of error-correction encoding processes on the first two-dimensional array, the encoding processes including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, and for forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied;

modulation means for successively modulating data in each row in the second two-dimensional array; and

recording means for recording the modulated data on the recording area of the optical disk.

Claim 14 (currently amended). An optical disk recording apparatus, which records information on an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals ~~and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals~~, wherein

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals,

the optical disk recording apparatus comprising:

encoding means for forming a first two-dimensional array by adding addition data to input data, for carrying out a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array so that a second two-dimensional array is formed;

modulation means for carrying out a data modulation while exchanging the data so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area; and

recording means for recording the modulated data on the recording area of the optical disk.

Claim 15 (currently amended). An optical disk reproducing apparatus, which reproduces information from an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals, wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals, the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, are carried out on the first two-dimensional array, a second two-dimensional array in which the length of each row is set to m (m: natural number) with a x m = b x n (a, b: natural numbers) being satisfied is formed, and data on each row in the second two-dimensional array are sent so that all the data in the second two-dimensional array are recorded on the recording area on the optical disk,

the optical disk reproducing apparatus comprising ~~and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals, the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, are carried out on the first two-dimensional array, a second two-dimensional array in which the length of each row is set tom (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied is formed, and data on each row in the second two-dimensional array is sent so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk, comprising~~:

reproducing means for reading data from the recording area;

demodulation means for demodulating data read by the reproducing means;

arranging means for arranging the demodulated data from the demodulation means into the second two-dimensional array; and

decoding means for carrying out decoding processes on the plurality of error-correction encoding processes with respect to the data arranged in the second two-dimensional array.

Claim 16 (currently amended). An optical disk reproducing apparatus, which reproduces information from an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals, the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array are carried out so that a second two-dimension array is formed, and data are successively recorded while exchanging the data in each row in the second two-dimensional array so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area.

the optical disk reproducing apparatus comprising: ~~and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals, the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array are carried out so that a second two-dimensional array is formed, and data is successively recorded while exchanging the data in each row in the second two-dimensional array so as to record a parity~~

~~generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area, comprising:~~

reproducing means for reading data from the recording area;

demodulation means for demodulating data read by the reproducing means;

arranging means for successively arranging the demodulated data from the demodulation means into the second two-dimensional array, while exchanging positions of the parities; and

decoding means for carrying out decoding processes on the error-correction encoding processes with respect to the data arranged in the second two-dimensional array.

Claim 17 (currently amended). An optical disk, comprising~~:~~ concave and convex areas that are formed as concave and convex sections on the disk substrate and arranged along a track with constant intervals, the optical disk comprising:~~; and~~

a recording area for recording data of a predetermined number of units n (n: natural number) that is placed between the concave and convex areas arranged with constant intervals,

wherein: a first two-dimensional array is formed by adding addition data to input data, a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, are carried out on the first two-dimensional array so that a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied is formed, and data on each row in the second two-dimensional array is successively recorded in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk.

Claim 18 (currently amended). An optical disk, comprising~~:~~ concave and convex areas that are formed as concave and convex sections on the disk substrate, and arranged along a track with constant intervals,~~; and~~and the optical disk comprising:

a recording area for recording data of a predetermined number of units n (n: natural number) that is placed between the concave and convex areas arranged with constant intervals,

wherein: a first two-dimensional array is formed by adding addition data to input data, a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array are carried out so that a second two-dimensional array is formed, and data is successively recorded while exchanging the data in each row in the second two-dimensional array so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area, so that all the data in the second two-dimensional array is recorded.

Claim 19 (new). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals, wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals, and

a data block, which is a unit of an error-correction encoding process, consists of a plurality of logical sectors, each of which is constituted by plural data segments, each of which is formed by the concave and convex areas and the recording area,

the recording method comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied, by carrying out a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, on the first two-dimensional array; and

successively sending data on each row in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk.

Claim 20 (new). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals, wherein

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals, and

a data block, which is a unit of an error-correction encoding process, consists of a plurality of logical sectors, each of which is constituted by plural data segments, each of which is formed by the concave and convex areas and the recording area,

the recording method comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a third two-dimensional array having the number of data contained in one row that does not exceed the number of rows by carrying out an error-correction encoding process on the first two-dimensional array by using a code sequence constituted by a data alignment in a diagonal direction so as to add a row constituted by a first encoding parity to the first two-dimensional array;

forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied by carrying out an error-correction encoding process on the third two-dimensional array by using a code sequence constituted by a data alignment in a row direction so as to add a second encoding parity to the third two-dimensional array; and

successively sending data on each row in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk.

Claim 21 (new). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals, and

a data block, which is a unit of an error-correction encoding process, consists of a plurality of logical sectors, each of which is constituted by plural data segments, each of which is formed by the concave and convex areas and the recording area,

the recording method comprising the steps of:

Claim 22 (new). An optical disk recording apparatus, which records information on an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals, wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and caonvex areas arranged with constant intervals, and

a data block, which is a unit of an error-correction encoding process, consists of a plurality of logical sectors, each of which is constituted by plural data segments, each of which is formed by the concave and convex areas and the recording area,

the optical disk recording apparatus comprising:

encoding means for forming a first two-dimensional array by adding addition data to input data, for carrying out a plurality of error-correction encoding processes on the first two-dimensional array, the encoding processes including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, and for forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied;

modulation means for successively modulating data in each row in the second two-dimensional array; and

recording means for recording the modulated data on the recording area of the optical disk.

Claim 23 (new). An optical disk recording apparatus, which records information on an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural

number) is placed between the concave and convex areas arranged with constant intervals, wherein

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and caonvex areas arranged with constant intervals, and

a data block, which is a unit of an error-correction encoding process, consists of a plurality of logical sectors, each of which is constituted by plural data segments, each of which is formed by the concave and convex areas and the recording area,

the optical disk recording apparatus comprising:

encoding means for forming a first two-dimensional array by adding addition data to input data, for carrying out a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array so that a second two-dimensional array is formed;

modulation means for carrying out a data modulation while exchanging the data so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area; and

recording means for recording the modulated data on the recording area of the optical disk.

Claim 24 (new). An optical disk reproducing apparatus, which reproduces information from an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals, wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals;

a data block, which is a unit of an error-correction encoding process, consists of a plurality of logical sectors, each of which is constituted by plural data segments, each of which is formed by the concave and convex areas and the recording area; and

the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a plurality of error-

correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, are carried out on the first two-dimensional array, a second two-dimensional array in which the length of each row is set to m (m: natural number) with a x m = b x n (a, b: natural numbers) being satisfied is formed, and data on each row in the second two-dimensional array are sent so that all the data in the second two-dimensional array are recorded on the recording area on the optical disk,

the optical disk reproducing apparatus comprising:

reproducing means for reading data from the recording area;

demodulation means for demodulating data read by the reproducing means;

arranging means for arranging the demodulated data from the demodulation means into the second two-dimensional array; and

decoding means for carrying out decoding processes on the plurality of error-correction encoding processes with respect to the data arranged in the second two-dimensional array.

Claim 25 (new). An optical disk reproducing apparatus, which reproduces information from an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals wherein:

the optical disk includes a recording area for recording data of a predetermined number of units n (n: natural number), the recording area placed between the concave and convex areas arranged with constant intervals;

a data block, which is a unit of an error-correction encoding process, consists of a plurality of logical sectors, each of which is constituted by plural data segments, each of which is formed by the concave and convex areas and the recording area; and

the optical disk being provided with an arrangement in which: a first two-dimensional array is formed by adding addition data to input data, a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array are carried out so that a second two-dimension array is formed, and data are successively recorded while exchanging the data in each row in the second two-dimensional array so as to record a

parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area.

the optical disk reproducing apparatus comprising:

reproducing means for reading data from the recording area;

demodulation means for demodulating data read by the reproducing means;

arranging means for successively arranging the demodulated data from the demodulation means into the second two-dimensional array, while exchanging positions of the parities; and

decoding means for carrying out decoding processes on the error-correction encoding processes with respect to the data arranged in the second two-dimensional array.

Claim 26 (new). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals, comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied, by carrying out a plurality of error-correction encoding processes, including at least an error-correction encoding process that forms a code sequence by using a data alignment in a diagonal direction of the first two-dimensional array, on the first two-dimensional array; and

successively sending data on each row in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk,

wherein, supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c.

Claim 27 (new). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals, comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a third two-dimensional array having the number of data contained in one row that does not exceed the number of rows by carrying out an error-correction encoding process on the first two-dimensional array by using a code sequence constituted by a data alignment in a diagonal direction so as to add a row constituted by a first encoding parity to the first two-dimensional array;

forming a second two-dimensional array in which the length of each row is set to m (m: natural number) with a X m = b X n (a, b: natural numbers) being satisfied by carrying out an error-correction encoding process on the third two-dimensional array by using a code sequence constituted by a data alignment in a row direction so as to add a second encoding parity to the third two-dimensional array; and

successively sending data on each row in the second two-dimensional array so that all the data in the second two-dimensional array is recorded on the recording area on the optical disk,

wherein, supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c.

Claim 28 (new). A recording method for an optical disk, which is used for an optical disk in which concave and convex areas formed as concave and convex sections on the disk substrate are arranged along a track with constant intervals and a recording area for recording data of a predetermined number of units n (n: natural number) is placed between the concave and convex areas arranged with constant intervals, comprising the steps of:

forming a first two-dimensional array by adding addition data to input data;

forming a second two-dimensional array by carrying out a single error-correction encoding process or a plurality of error-correction encoding processes which form code sequences by using data alignments in respectively different directions of the first two-dimensional array on the first two-dimensional array; and

successively sending data on the respective rows in the second two-dimensional array while exchanging the data so as to record a parity generated in at least any one of the error-encoding processes on a portion adjacent to the concave and convex areas in the recording area, thereby recording all the data in the second two-dimensional array on the recording area on the optical disk,

wherein the second two-dimensional array has a length of each row that is set to m (m: natural number), with a X m = b X n (a, b: natural numbers) being satisfied and wherein,

supposing that the number of data related to one logical sector is 1 byte (1: natural number greater than m), 1 = c X m (c: natural number) is satisfied and supposing that the minimum combination of a and b that satisfies a X m = b X n are a_{min} and b_{min}, a_{min} is set to a divisor of c that is smaller than c.